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Industrial automation systems and integration – Integration of life-cycle data for oil and gas production facilities – Part 5: Conformance

ABSTRACT:

This document describes the conformance requirements of ISO 15926 "Integration of life-cycle data for oil and gas production facilities"

KEYWORDS:

industrial data, oil and gas, facility, life-cycle, integration, data model, reference data, conformance

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Comments to reader:

This is the first draft of ISO 15926-5 for review by members of WG3 T21 “Oil and gas".

Interim editorial guidelines, and an accompanying Word template, have been used in the preparation of this document. These guidelines apply the requirements of the ISO/IEC Directives 3, and appropriate requirements of the SC4 Supplementary Directives for ISO 10303. Editorial notes and issues within the text are indicated through the use of boxed text.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 15926-1 was prepared by Technical Committee ISO/TC184, *Industrial automation systems and integration*, Subcommittee SC4, *Industrial data*.

ISO 15926 consists of the following parts under the general title *Industrial automation systems and integration – Integration of life-cycle data for oil and gas production facilities*:

— Part 1, Overview and fundamental principles;

— Part 2, Data model;

— Part 3, Methodology for the development and maintenance of reference data libraries;

— Part 4, Reference data[1];

— Part 5, Conformance[1].

This part of ISO 15926 describes the conformance requirements of this International Standard.

[1] To be proposed as an additional Part of this International Standard.

Introduction

ISO 15926 is an International Standard for the representation of oil and gas production facility life-cycle information. This representation is specified by a generic, conceptual data model that is suitable as the basis for implementation in a shared database or data warehouse. The data model is designed to be used in conjunction with reference facility data – standard instances that represent information common to a number of users, production facilities, or both.

ISO 15926 is organized as a number of parts, each published separately. This part of ISO 15926 specifies the conformance requirements of ISO 15926 for

— Exchange files;

— Data stores.

Industrial automation systems and integration – Integration of life-cycle data for oil and gas production facilities – Part 5 - Conformance

1 Scope

This part of ISO 15926 describes how a computer system that maintains computer processable data about oil and gas production facilities may conform to the requirements of ISO 15926.

ISO 15926 – 2 describes a conceptual data model that defines how information about oil and gas production facilities shall be represented as computer processable data.

ISO 15926 – 4 defines a set of reference data for information common to oil and gas production facilities.

The reference data of Part 4 are instances of the conceptual data model of ISO 15926 – 2.

The conformance requirements of this Part state how the data model and reference data shall constrain conforming computer systems.

Conformance is described for two system implementation forms:

— A static exchange file, static in the sense that the contents of the file are fixed such that if the contents change it becomes a new file;

— A data store whereby data may be stored and then data added, deleted, updated and queried in some way.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 15926-1:1998, Industrial automation systems and integration – Integration of life-cycle data for oil and gas production facilities – Part 1: Overview and fundamental principles.

ISO 15926-2:1998, Industrial automation systems and integration – Integration of life-cycle data for oil and gas production facilities – Part 2: Data Model.

ISO 15926-3:1998, Industrial automation systems and integration – Integration of life-cycle data for oil and gas production facilities – Part 3: Methodology for the development and maintenance of reference data libraries.

ISO 15926-4:1998, Industrial automation systems and integration – Integration of life-cycle data for oil and gas production facilities – Part 4: Reference data.

ISO 10303-1:1994, *Industrial automation systems and integration – Product data representation and exchange – Part 21: Clear text encoding of the exchange structure.*

3 Terms, definitions, and abbreviated terms

For the purposes of this International Standard, the following terms, definitions and abbreviations apply; those taken from ISO 10303-1 are repeated below for convenience.

3.1 Attribute
Attribute – see ISO 10303-11 EXPRESS Language reference manual

3.2 Conformance
Conformance – the fulfilment by an implementation of all requirements specified.

3.3 Data Store
Data store – a data warehouse or database, which allows data to be stored for future reference.

3.4 Entity type
Entity type – synonym to term ‘entity’ - see ISO 10303-11 EXPRESS Language reference manual

3.5 Exchange file
Exchange file – synonym for exchange structure – see ISO 10303–21.

3.6 Instance
Instance – computer data that represents some existent real world thing

3.7 Supertype
Supertype – see ISO 10303–11 EXPRESS Language reference manual.

3.8 Subtype
Subtype – see ISO 10303–11 EXPRESS Language reference manual.

This list is not yet complete.

4 Conformance Requirements

4.1 Exchange file

An exchange file conforming to ISO 15926 shall

— Conform to ISO 10303-21 where the FILE_SCHEMA entity shall be the oil_and_gas_production_facility_schema as defined in Part 2 of this standard

— Be restricted to contain only instances of the oil_and_gas_production_facility_schema

There are no further restrictions on the content of the file. The file may contain all, part or none of the reference data defined in Part 4 of this standard.

4.2 Data Store

4.2.1 Programmable interface

A data store conforming to ISO 15926 shall

— Provide a programming interface that enables instances to be manipulated by reference to the entity types and their attribute types as defined by the data model of Part 2 of this standard. Manipulation includes but is not limited to:

1) Creation of new instances as members of any valid entity type or valid combinations thereof together with attribute values valid for the entity types;

NOTE - the data model of Part 2 restricts the valid combinations of entity types that may type an instance and the types of attributes the instance may have.

2) Deletion of instances and deletion of attribute values;

3) Update of attributes of instances, according to entity type;

4) Selection of groups of instances according to their entity type and attribute values.

NOTE – instances that are members of a subtype are also members of all the supertypes of the subtype. Selection of all instances that are members of a supertype shall include members of any of its subtypes. For example- selection of instances of the type *thing* – where *thing* is the entity type defined in Part 2, with no other restrictions, should give all instances recorded in the data store.

No further specifications of types of data manipulation operations are provided.

4.2.2 Data store contents

Constraints on the contents of a conforming data store gives rise to conformance classes. The following conformance classes have been defined

— Class A data store.

Further conformance classes may be added if new sets of reference data are added to ISO 15926 - 4.

4.2.3 Class A data store

A Class A conforming data store shall

— Be a conforming data store as defined in 4.2.1 above;

— Contain all the reference data of Part 4 of this standard.

4.3 Data StoreTesting

Conformance testing of a data store implemtation shall consist of:

— checking the presence of all the schema entity names in the interface

— checking the presence of all entity attribute names in the interface

— checking the constraints on the attribute data types to be in accordance with the schema

and using the test data sets defined below to

— check the ability of the interface to create, delete, update entity and attribute instances

— checking the ability of the interface to select instances

4.3.1 Test data sets

To be added.

To be added